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Constellation Energy
Nine Mile Point Nuclear Station, LLC

December 18, 2008

U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

ATTENTION: Document Control Desk

SUBJECT: Nine Mile Point Nuclear Station
Unit No. 1 Docket No. 50-220

Licensee Event Report 2008-002, Manual Reactor Scram due to Loss of Reactor Pressure Control

Gentlemen:

In accordance with 10 CFR 50.73(a)(2)(iv)(A), please find attached Licensee Event Report 2008-002, Manual Reactor Scram due to Loss of Reactor Pressure Control.

There are no regulatory commitments in this submittal.

Should you have questions regarding the information in this submittal, please contact T. F. Syrell, Licensing Director, at (315) 349-5219.

Very truly yours,

SLB/MHS

Attachment: Licensee Event Report 2008-002, Manual Reactor Scram due to Loss of Reactor Pressure Control

cc: S. J. Collins, NRC
R. V. Guzman, NRC
Resident Inspector, NRC

IE22
NRR

ATTACHMENT

LICENSEE EVENT REPORT 2008-002

MANUAL REACTOR SCRAM DUE TO LOSS OF REACTOR PRESSURE CONTROL

Nine Mile Point Nuclear Station, LLC
December 18, 2008

ONRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE

Manual Reactor Scram Due to Loss of Reactor Pressure Control

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	23	2008	2008	002	00	12	18	2008	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

N

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Terry Syrell, Licensing Director	(315) 349-5219

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	JJ	RG	NA	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On October 23, 2008, at 2126 hours, with Nine Mile Point Unit 1 (NMP1) operating at 100% steady state reactor power, operators initiated a manual scram when it was determined that the reactor pressure regulator was not functioning properly. The loss of reactor pressure control was due to an unresponsive Electrical Pressure Regulator (EPR) that prevented transfer of control to the backup Mechanical Pressure Regulator (MPR). During the shutdown, operators entered an Emergency Operating Procedure due to low reactor water level and took appropriate corrective actions. The High Pressure Coolant Injection (HPCI) system initiated as designed to restore reactor water level to normal. After the turbine trip, all Turbine Bypass Valves failed open due to EPR binding that prevented the bypass valves from closing. The Main Steam Isolation Valves (MSIVs) were manually shut to control reactor pressure and limit reactor cooldown rate. The MSIVs were reopened subsequent to regaining pressure control on the MPR.

The cause of the EPR malfunction has been determined to be debris plugging of the internal filter of the EPR servo-valve. The most likely cause of the debris in the servo-valve was due to inadequate design of the EPR filters located immediately upstream of the servo-valve.

On October 26, 2008, after replacement of the EPR servo-valve and the filters, the unit was restarted and on October 27, 2008, at 0131 hours, the unit was synchronized to the grid.

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NARRATIVE

I. DESCRIPTION OF EVENT

A. PRE-EVENT PLANT CONDITIONS:

On October 23, 2008, Nine Mile Point Unit 1 (NMP1) was in the power operating condition at approximately 100% steady state reactor power.

B. EVENT:

On October 23, 2008, at 2104 hours, with Nine Mile Point Unit 1 (NMP1) operating at 100% steady state reactor power, operators entered a Special Operating Procedure (SOP) to take control of reactor pressure through the backup Mechanical Pressure Regulator (MPR) due to malfunction of the Electrical Pressure Regulator (EPR). Upon failure to control reactor pressure, operators initiated a manual scram at 2126 hours. During the shutdown, operators entered the applicable Emergency Operating Procedure due to low reactor water level and took appropriate corrective actions. The High Pressure Coolant Injection (HPCI) system initiated as designed to restore reactor water level to normal. After the turbine trip, all Turbine Bypass Valves failed open due to EPR binding that prevented the bypass valves from closing. The Main Steam Isolation Valves (MSIVs) were shut to manually control reactor pressure and limit the reactor cooldown rate. Once pressure control on the MPR was established, the MSIVs were reopened and the Turbine Bypass Valves were used to control reactor pressure and cooldown.

C. INOPERABLE STRUCTURES, COMPONENTS, OR SYSTEMS THAT CONTRIBUTED TO THE EVENT:

Electrical Pressure Regulator (EPR)

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NARRATIVE

D. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES:

October 23, 2008, 2104: Control Room Operators observed a slight rise in reactor pressure. Investigation led the operators to determine the EPR was not functioning properly. Operators entered a Special Operating Procedure to control reactor pressure.

October 23, 2008, 2126: Initiated a manual scram.

October 23, 2008, 2126: HPCI initiated.

October 23, 2008, 2128: Entered Emergency Operating Procedure due to low reactor water level. All Turbine Bypass Valves failed open. MSIVs were shut to maintain inventory in the vessel.

October 24, 2008, 0932: Unit in cold shutdown.

October 25, 2008, 1839: Installed and tested new Electrical Pressure Regulator.

October 26, 2008, 0453: Reactor mode switch placed in startup position.

October 27, 2008, 0131: Synchronized the unit to the grid.

E. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

The channel 12 Reactor Protection System scram signal would not reset due to a failed component.

F. METHOD OF DISCOVERY:

This event was immediately apparent by control room indications.

G. MAJOR OPERATOR ACTION:

The operators entered applicable a Special Operating Procedure (SOP) to take manual control of reactor pressure through the Mechanical Pressure Regulator (MPR).

Upon failure to control reactor pressure, the operators initiated a scram.

NARRATIVE

During the shutdown, operators entered an Emergency Operating Procedure and took appropriate corrective actions due to low reactor water level. Low reactor water level is an anticipated condition following a reactor scram from high power.

After the turbine trip, the Main Steam Isolation Valves (MSIVs) were shut to manually control reactor pressure when all Turbine Bypass Valves failed open. The MSIVs were reopened and the Turbine Bypass Valves were used to control reactor pressure and cooldown, once pressure control on the MPR was established.

H. SAFETY SYSTEM RESPONSES:

The HPCI system initiated on low reactor water level following the scram and restored reactor water level, as expected.

All control rods fully inserted immediately following the scram.

II. CAUSE OF EVENT:

The EPR servo-valve internal filter became plugged with debris to the point that the servo-valve could no longer function to control reactor pressure. The most likely cause of debris in the servo-valve was an inadequate design of the EPR filters which are located immediately upstream of the servo-valve. The EPR filters are divided into two redundant, parallel filter banks. Each bank consists of two filters and an empty filter housing. Following filter change outs, the filter train must be vented. This venting process provides an opportunity to disturb debris in the empty filter housing and thus allow it to be transported to the servo-valve after the EPR filter is placed in service.

The event is a NUREG-1022 Cause Code B, "Design, Manufacturing, Construction / Installation."

NMP Condition Report 2008-8016 applies to this LER.

III. ANALYSIS OF THE EVENT:

This event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) because of manual actuation of Reactor Protection System (RPS) and HPCI system initiation.

The analyzed transients in the NMP1 Updated Final Safety Analysis Report (UFSAR) bound a manual scram from 100% power. Section XV.B.3.21, Pressure Regulator Malfunction, with full bypass valve opening is analyzed and does not challenge fuel or reactor limits. This event is not a "limiting" event requiring re-evaluation each operating cycle.

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This event did not result in exceeding the 100 degrees per hour cool down rate specified by the technical specifications.

The event is also bounded by the existing core shroud repair analysis.

IV. CORRECTIVE ACTIONS:

A. ACTION TAKEN TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:

The malfunctioning Electrical Pressure Regulator servo-valve was replaced with a new valve. The EPR filters were replaced and the empty housings were cleaned out.

The channel 12 Reactor Protection System was repaired.

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

Actions completed to prevent recurrence include:

- Revised maintenance practice to include cleaning of the empty filter housing each time the filters are changed.

Actions planned to prevent recurrence include:

- Implement a design change to eliminate potential for debris accumulation in the filter housing.

V. ADDITIONAL INFORMATION:

A. FAILED COMPONENTS:

Electrical Pressure Regulator

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B. PREVIOUS LERs ON SIMILAR EVENTS:

The following event occurred at Nine Mile Point Unit 1:

On October 16, 1987, a malfunction of the Electrical Pressure Regulator servo-valve resulted in a reactor scram. This event was reported in LER 1987-014. The cause of the malfunction was due to binding of its internal components as a result of the presence of impurities in the turbine control oil. As a corrective action, a third filter was added. However, this new design proved inadequate resulting in low oil flow and high filter differential pressure. In 1993 this modification was revised to eliminate the third filter leaving an empty filter housing.

C. THE ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) COMPONENT FUNCTION IDENTIFIER AND SYSTEM NAME OF EACH COMPONENT OR SYSTEM REFERRED TO IN THIS LER:

COMPONENT	IEEE 803 FUNCTION IDENTIFIER	IEEE 805 SYSTEM IDENTIFICATION
Pressure Regulator	RG	JJ
Reactor Protection System	NA	JC
Turbine Bypass Valves	V	SB
Main Steam Isolation Valves	V	SB
High Pressure Coolant Injection System Pump	P	BJ

D. SPECIAL COMMENTS:

None